

**REMARKS**

Claims 1-13 are pending in this application. Claims 1-7 were rejected in the October 30, 2006 Office Action (the "Action"). Claims 8-13 are added herein. Support for new Claims 8-13 may be found throughout the specification. In particular, support for Claim 8 at least may be found *e.g.*, at page 10, line 13 – page 11, line 1. Support for claims 9-11 at least may be found in the examples, (see *e.g.*, Example 1 at page 22, line 19-page 23, line 24). Support for claims 12 and 13 at least may be found *e.g.*, at page 20, lines 13-16. No new matter is believed to be added by the addition of these new claims.

Reconsideration and withdrawal of the rejections and allowance of all claims are respectfully requested in view of the following remarks.

As a preliminary matter, the Abstract was objected to as exceeding 150 words in length. The Abstract is amended herein to be less than 150 words. Accordingly, withdrawal of the objection is respectfully requested.

***Claim Rejections Under 35 U.S.C. §102***

Claims 1-7 stand rejected under 35 U.S.C. §102(b) as allegedly being anticipated by U.S. Patent 6,261,989 B1 to Tanaka et al ("the '989 patent"). Applicants respectfully traverse this rejection.

Claim 1 recites a method for producing a perovskite-type composite oxide that includes the steps of preparing a precursor of the perovskite-type composite oxide by mixing at least organometal salts of elementary components constituting the perovskite-type composite oxide

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including organometal salts of at least one noble metal, and heat-treating the precursor of the perovskite-type composite oxide. Embodiments encompassed by Claim 1 include methods where (1) a precursor is prepared by mixing organometal salts of all elementary components of a perovskite-type composite oxide (including at least one noble metal), and (2) where a precursor is prepared by mixing organometal salts of some elementary components of a perovskite-type composite oxide (including at least one noble metal), and separately other elementary components are prepared as alkoxides, a coprecipitate or a citrate complex of respective elements, and the organometal salts are mixed with the alkoxide, coprecipitate or citrate complex to form the precipitate. Either way, Claim 1 requires organometal salts of elementary components that include a noble metal, which was believed to have been implicit in the original claim language. For the sake of clarity, Claim 1 is amended herein to explicitly recite that the organometal salts include salts of at least one noble metal component of the perovskite-type composite oxide. Because the organometal salts were believed to previously include organometal salts of the noble metal component of the perovskite-type composite oxide, it is believed that the present amendment does not narrow the claims.

The Action does not set forth any teaching or suggestion in the '989 patent of a precursor that includes organometal salts of elementary components including at least one noble metal of the perovskite-type composite oxide. Rather, the portion of the '989 patent cited in the Action discusses preparing an alkoxide mixture and adding water to coprecipitate or hydrolyze and thereafter heating. Thus, the Action does not set forth a *prima facie* case of anticipation.

Further, the '989 patent teaches that the noble metal (Pd) is supported on the cerium complex oxide particles using known techniques, such as impregnating the cerium complex oxide with a Pd salt solution (See Col. 4, lines 50-64). "Examples of salts usable for this purpose include nitrate, dinitro diammine nitrate, and chloride." (See Col. 4, lines 55-57 of the '989 patent). The background section of the present specification distinguishes over methods such as that of the '989 patent, which use the noble metal as an aqueous solution of a salt thereof such as nitrate, chloride, or dinitrodiammine salt. In particular, the background of the present application indicates that methods using the noble metal as an aqueous solution of a salt thereof such as nitrate, chloride, or dinitrodiammine salt may invite an abrupt exothermic reaction in the heat treatment, which may in turn invite bubbling over of the resulting powder. (See page 3, line 24-page 4, line 3 of the present specification). To avoid this, the temperature must be gradually raised, which constitutes a significant limitation in industrial production. In addition, the heat treatment yields harmful by-products such as nitric acid, hydrochloric acid or amines. (See page 4, lines 3-8 of the present specification).

By preparing a precursor that includes organometal salts of elementary components of the perovskite-type composite oxide, including organometal salts of the noble metal(s) of the perovskite-type composite oxide, the noble metal is efficiently, finely and highly dispersed in perovskite-type composite oxides produced by the presently claimed methods, and can maintain their high catalytic activity even in long-term use. Additionally, the present methods are free from an abrupt exothermic reaction in the heat treatment, and the heat treatment yields organic

substances but does not yield harmful by-products, thus improving the safety and hygiene of the methods.

For at least these reasons, Applicants respectfully submit that the present claims are neither taught nor suggested by the '989 patent and withdrawal of the rejection is respectfully requested.

Claims 1-7 stand rejected under 35 U.S.C. §102(b) as allegedly being anticipated by the article titled "An Intelligent Catalyst" by Hirohisa Tanaka et al. ("Tanaka article"). Applicants respectfully traverse this rejection, at least because the Tanaka article does not teach or suggest preparing a precursor of the perovskite-type composite oxide by mixing at least organometal salts of elementary components including at least one noble metal constituting the perovskite-type composite oxide.

The Action does not set forth any teaching or suggestion in the Tanaka article of a precursor that includes organometal salts of at least one noble metal elementary component of the perovskite-type composite oxide. As with the '989 patent, the Tanaka article teaches a different method in which a precipitate containing Pd is obtained by using a diluted palladium nitrate aqueous solution during hydrolysis (See page 3, first paragraph of the "Experimental" section). As discussed above, such methods, which use the noble metal as an aqueous solution of a salt thereof such as nitrate, chloride, or dinitrodiammine salt may invite an abrupt exothermic reaction in the heat treatment, which may in turn invite bubbling over of the resulting powder. To avoid this, the temperature must be gradually raised, which constitutes a significant

limitation in industrial production. In addition, the heat treatment yields harmful by-products such as nitric acid, hydrochloric acid or amines.

As indicated above, the present methods result in the noble metal being efficiently, finely and highly dispersed in the perovskite-type composite oxide. Additionally, the present methods are free from an abrupt exothermic reaction in the heat treatment, and the heat treatment yields organic substances but does not yield harmful by-products. The present methods, which use organometal salts of at least one noble metal elementary component are neither anticipated by nor obvious over the methods discussed in the Tanaka article.

For at least these reasons, Applicants respectfully submit that the present claims are neither taught nor suggested by the Tanaka article and withdrawal of the rejection is respectfully requested.

Claims 1-7 stand rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Japanese Patent Application No. H03-68451 ("JP-451"). Applicants respectfully traverse this rejection as well. This rejection is based on the assertion in the Action that a perovskite-type double oxide is made by adding citric acid to a solution of metal nitrates to prepare an aqueous solution, and thereafter evaporating and calcining to form the perovskite-type double oxide (See page 5 of the Action). The Action does not make out a *prima facie* case of anticipation because there is no indication that JP-541 teaches or suggests preparing a precursor of a perovskite-type composite oxide by mixing at least organometal salts of elementary components including at least one noble metal constituting perovskite-type composite oxide.

Similarly to the above-discussed references, JP-541 teaches a different method in which a metal nitrate solution is formed, rather than an organometal salt solution. As discussed above, such methods, which use the noble metal as an aqueous solution of a salt thereof such as nitrate, may invite an abrupt exothermic reaction in the heat treatment. Thus, the temperature must be gradually raised, which constitutes a significant limitation in industrial production. In addition, the heat treatment yields harmful by-products such as nitric acid. Thus, the method discussed in JP-541, which does not teach or suggest the use of an organometal salt solution of a noble metal, does not anticipate or render obvious the presently claimed methods.

For at least these reasons, Applicants respectfully submit that the present claims are neither taught nor suggested by the JP-541 reference and withdrawal of the rejection is respectfully requested.

Claims 1-7 stand rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Japanese Patent Application No. H11-262663 (“JP-663”). Applicants respectfully traverse this rejection. In particular, the Example of JP-663 discussed at page 4 of the Action, does not teach or suggest mixing organometal salts of elementary components including at least one noble metal constituting a perovskite-type composite oxide. Although in the JP-663 reference an organic metal is supplied in preparation of an alkoxide solution, there is no indication in the cited portion of the reference that an organic metal salt is formed as part of a precursor of a perovskite-type composite oxide. Because the reference does not teach or suggest that organometal salts are formed, the reference does not anticipate or render obvious the present

claims. In the present methods, mixing organometal salts results in the noble metal being efficiently, finely and highly dispersed in the perovskite-type composite oxide.

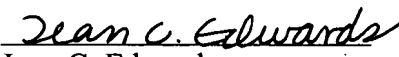
For at least these reasons, Applicants respectfully request withdrawal of this rejection also.

Because all of the objections and rejections are believed to be overcome herein, Applicants respectfully request allowance of the present claims.

If the Examiner believes that there is any issue that could be resolved by a telephone or personal interview, the Examiner is respectfully requested to contact one of the undersigned attorneys at the telephone number listed below.

Applicants hereby petition for any extension of time which may be required to maintain the pendency of this case, and any required fee for such an extension is to be charged to Deposit Account No. 50-0951.

Respectfully submitted,

  
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